TOOL DIE MACHINE PROGRESS

THE NATIONAL TOOL AND DIE JOURNAL

TOOLS, DIES, JIGS, FIXTURES, MOULDS, GAGES, MACHINES
Design and Engineering
PRECISION SPECIALTIES
STAMPING and PARTS PRODUCTION
Official Publication
Special Tool, Die & Machine Shop Industry

NUARY
1937

1. **Stronger Teeth**
Improved Flute design permits heavier flutes with greater chip clearance.

2. **More Chip Clearance**
New cupped end and re-designed end-teeth prevent clogging of chips and resultant breakage.

3. **Fast Spiral Design**

WELDON
Double end, End-Mills
for
Improved Performance

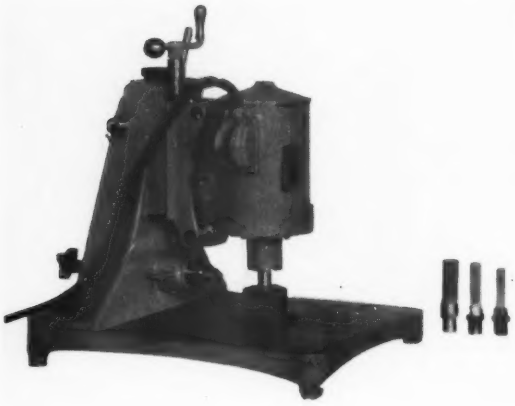
GREATER CUTTING EFFICIENCY

Stronger teeth and more chip clearance, together with the regular WELDON hollow ground flutes, double back off and fast spiral, make this new end-mill 50% stronger and twice as fast cutting as formerly.

The WELDON TOOL CO.
321 FRANKFORT AVE.
CLEVELAND, OHIO

"Pioneers in Fast Spiral Double-end End Mills"

Let us ship you a
GRINDRITE GRINDER



for a 10-day free trial in your own plant

•

It will sell itself to you because you will recognize how quickly it can pay for itself.

From the shaper direct to Grindrite and the job is finished.

•

GRINDRITE is unique.

The Portable Bench Model illustrated is remarkably fast—7500 to 12500 RPM, unusually convenient—motor pivots for grinding clearance, quick toggle mechanism lifts wheel clear for work inspection. Adjustable diamond dresser is built in. Grindrite eliminates special "set-ups" because it is immediately adaptable to grinding any contour, no matter how difficult or unusual.

Interesting circular and list of users on request.

TO USERS OF SHEET METAL DIES

We have the most modern die making facilities available anywhere. Small, medium and large dies—including the largest—made on contract by an experienced organization of highly skilled men.

Our prices are right.

KOESTLIN TOOL & DIE CORP.

3605 HUMBOLDT AVENUE DETROIT, MICH.

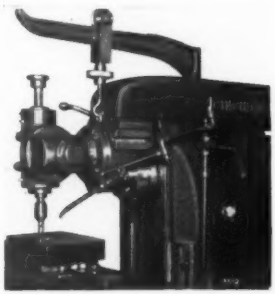
When you order or write about products described in TDM PROGRESS please mention the publication.

New HIGH SPEED UNIVERSAL MILLING ATTACHMENT

THIS new High Speed Universal Milling Attachment, made in sizes to fit Cincinnati L-type, MH, and Dial Type Milling Machines, is especially useful in tool room and light production work requiring the use of small milling cutters, drills, or boring tools. The attachment spindle may be swiveled 360° in a plane parallel to the face of the machine column, and 90° in a plane at right angles to the face of the column.

Notice in particular the method of attaching the unit to the machine. The overarm itself, being generously proportioned to withstand deflections, constitutes the supporting element for the attachment. This construction permits the machine cross range to be 100 per cent usable; greatly exceeding the useful range generally obtained with the conventional method of clamping the attachment to the machine column.

Write for descriptive literature.



A crane attachment for quick removal of complete attachment can also be supplied extra cost.

CINCINNATI

THE CINCINNATI MILLING MACHINE COMPANY
CINCINNATI, OHIO, U. S. A.

When you order or write about products described in TDM PROGRESS please mention the publication.

Announcing . . .

INCREASED FACILITIES

but the same efficient organization

INSTALLATION of the latest model Cincinnati Hypro Open-side Planer with dimensional work capacity, 91 inches wide - 73 inches high - 12 feet long, operating in conjunction with new Giddings & Lewis Boring and Keller Automatic Tool Room equipment enables us to more efficiently manufacture LARGE Dies.

We now operate also a Metal Stamping Department with complete facilities for Flash and Projection Welding and Assembling.

FROM DIE DESIGN TO FINISHED STAMPINGS AND ASSEMBLIES ★ SERVICE IS UNEXCELLED.

—

Die Design
and Engineering

Die Manufacture
Large
Medium
Small

Metal Stampings
Manufacture
and Assembly

—

Flash and
Projection Welding

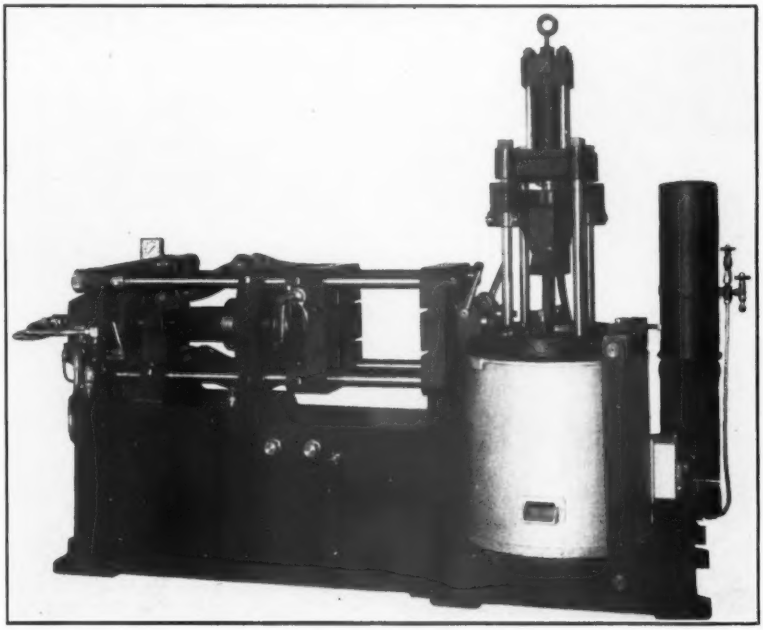
We solicit the opportunity to quote on DIES of all sizes, METAL STAMPINGS to be made from dies already built, or the entire job, from die to assembly.

STAR TOOL & DIE WORKS

2530 Twenty-Fourth Street **Detroit, Michigan**

When you order or write about products described in TDM PROGRESS please mention the publication.

NEW...*but thoroughly proven*



THE LESTER HHP2 DIE CASTING MACHINE

embodies operating features and obtains production results never before attained.

1—*Perfect alignment* Die Adjuster—accurate, fast—cuts change-over time to new low.

2—Automatic *Finger Tip* Controls—positive, foolproof.

3—Full Hydraulic Operation—more rapid die motion, better castings.

4—Hydraulic Ejector—new design assures perfect coordination of working parts.

5—Furnace—round type, independent unit—easily removed.

Write us for detailed descriptive circular, production possibilities and actual results being achieved from machines now in use.

THE PHOENIX ICE MACHINE COMPANY

Corner Church and West 28te Streets — Cleveland, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

We believe in the principle of the

DIRECT DRIVEN GRINDING SPINDLE

In Actual Service the

PARKER MOTORIZED SPINDLE

has these proven advantages:

1. Direct increase in work efficiency—saving up to 25%.

2. No belts to break, no expense for new belts, no loss of time for replacement.

3. Elimination of idlers effects direct power-saving—up to 50% over belt driven spindle.

•

Parker Direct Driven Spindles are designed and built for new equipment or for change-over of belt driven type.

MAJESTIC TOOL & MFG. COMPANY

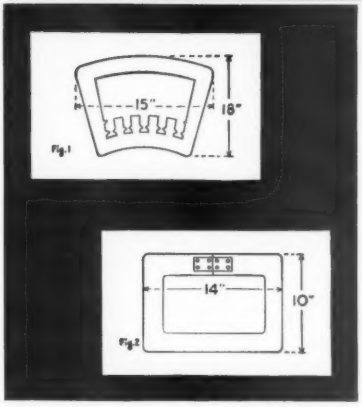
2948 Woodbridge St., East
Detroit, Mich.

The illustration is of a **Brown & Sharpe** *No. 2 Surface Grinder which has been converted from belt drive to direct drive with a Parker Motorized Spindle.*

The installation is simple, the cost moderate, the saving large.

Please write us for details.

When you order or write about products described in TDM PROGRESS please mention the publication.



DOALL DUAL

THE new internal and external contour saw saves in making the parts illustrated so that this DOALL user can say, "It has been our experience in making irregular shaped dies that the sawing and filing method has practically eliminated the slotter or internal shaping method."

These are only examples of the astonishing savings made by the new cutting process that saws, files, polishes.

Find out how the DOALL CONTOUR method can speed up your production as it has in electric, air craft, auto, other industries through its controlled mastery of metal.

GENERAL ELECTRIC COMPANY

GENERAL OFFICE
SCHENECTADY, N. Y.

1 River Road
SCHENECTADY, N. Y.

Nov. 23, 1938.

Mr. L. A. Wilkie,
Continental Machine Specialties, Inc.,
1301 Washington Ave. South,
Minneapolis.

Dear Sir:

Since the installation of our two Do-All machines, we have eliminated practically all vertical shaper work on outside strippers for combination and blanking dies, as shown on attached sketch Figure #1. These stripper plates merely strip the scrap from the punch and for this reason, the accuracy required usually permits us to saw out on the layout line and finish up with very little filing.

Various sizes of aluminum plates, such as shown in Figure #2, were formerly made on a band saw, which of course meant that they had to be cut through the rim and patched as shown. These plates are now made on our Do-All machines and the extra work of patching is now eliminated.

It has been our experience in making irregular shaped dies that the sawing and filing method has practically eliminated the slotter or internal shaping method.

In addition to the use of these machines on die work, we have used them to very good advantage for sawing out various parts used in the manufacture of jigs, fixtures and miscellaneous tools. As our operators become more experienced with these machines, we, no doubt, will find other work which could be done to very good advantage on them.

Very truly yours,

H. G. TANG,

BGT.H GENERAL SUPERINTENDENT.

FREE! **Illustrated indexed handbook. Write on company letterhead, giving name and position.**

Ask for a DOALL demonstration in your plant

CONTINENTAL MACHINE SPECIALTIES
1301 South Washington Avenue
MINNEAPOLIS - - MINNESOTA

When you order or write about products described in TDM PROGRESS please mention the publication.

ADJUSTABLE WHILE RUNNING!

A COMPARISON

A common T-square costs two or three dollars—a drafting machine twenty to fifty times as much.

As good a drawing can be made with one as with the other, that is, if time is of no consequence.

Today the T-square as a production tool is almost as obsolete as the high wheel bicycle of fifty years ago. It is too slow for today's needs—it lacks Adjustability, Speed, Range, Flexibility—It is fifty years behind the times.

In the same class as the T-square is the wrench-adjusted offset boring tool. One which was absolutely identical in every mechanical detail with those of today was shown at the Philadelphia Centennial in 1876. Not one essential change has been made in sixty years!

A FACT

Over the now obsolete wrench-adjusted boring tool the Precision Universal Tool Head marks an even greater advance than the drafting machine does over the T-square, because all adjustments are under absolute micrometric control of the operator at all times and at all speeds **WITHOUT STOPPING TOOL OR MACHINE.**

By a mere turn of the wrist, the cutting tool is instantly adjusted to a fraction of a thousandth for boring, or fed continuously across or into the work for facing or recessing.

It is the fastest and most accurate boring tool in existence.

But it is much more than that. It is, as the name implies, a truly universal tool head which faces, counterbores, turns outside diameters of hubs and bosses, recesses, mills flat surfaces and slots, undercuts, backfaces, repans and does a wide range of "headache" jobs that are utterly impossible with any other tool.

These things the antiquated wrench-adjusted boring tool cannot do because it cannot be adjusted while running.

PRICE OR PERFORMANCE?

Performance alone is what counts today.

Therefore, obsolete types of tools are usually sold on "price". Yet the Precision Universal Tool Head costs little, if any, more than a plain wrench-adjusted head of the same capacity, and one compact size handles all diameters from 1/16" to 16", eliminating the need for the various sizes required in other forms of boring tools.

Let us send you bulletins and additional information regarding this indispensable tool, or arrange for a demonstration in your own plant.

THE PRECISION TOOL COMPANY, Bridgeport, Conn.

When you order or write about products described in TDM PROGRESS please mention the publication.

Tool • Die • Machine
PROGRESS
The National Tool and Die Journal

January, 1937 Vol. 2, No. 10

There Are No Formulas for Design of Roller Dies for Roll Forming Sheet Metal

Experience Continues To Be Designer's Greatest Help

By NORBERT C. RUBIN, Engineer
The McKinney Tool & Mfg. Co.

MANY articles have been written pertaining to this subject and attempts have been made to establish formulas to facilitate the design of forming rolls but the fact remains that experience is the dominating factor. Almost every manufacturing concern that uses roll forming machinery, designs its own forming rolls and it is likely that an identical piece of moulding may be successfully roll formed by several different methods according to the individual designer's experience and opinion.

The initial aim in designing a set of forming rolls is to minimize the number of rolls necessary to form the desired section so as to reduce the tooling cost, and in some cases, to come within the capacity of the roll forming machine. While this point is also a matter of opinion and cannot be governed by any fixed set of rules, the designer should beware of using too few rolls instead of too many. It is seldom that too many rolls are used to form a section of moulding and there have been cases where the attempted use of not enough rolls has resulted in the necessity for re-designing and rebuilding an entire new set of rolls.

The second aim of the roll designer should be to eliminate the use of guides between the forming rolls. In many instances this can be accomplished by proper design of rolls but in the majority of cases some type of guide should be used between the forming rolls to prevent the strip of sheet metal from wandering from the necessary path and to facilitate its entry into the succeeding pair of rolls. If the sheet of metal being formed is of light gauge stock, the guides can be depended upon to do a slight amount of forming although such procedure is not generally advisable. In most cases the guides are stationary pieces of iron, steel, or bronze, mounted between the forming rolls but some designers prefer the use of small idler rollers with their peripheries formed to suit the shape of the sheet metal as it passes the respective guide rollers. When it is necessary to slightly form the strip of sheet metal between the forming rolls, the roller type of guide is much more preferable than the stationary type because of the alleviation of wear. Occasionally it becomes necessary to form the strip of sheet metal around a mandrel when a closed section is being formed and when external pressure alone will not accomplish the desired effect. A good example of the necessary use of a mandrel is in the roll forming of lock seam tubing.

Finally, the rolls should be designed with the intention of forming a straight section without the use of any straightening means. This point usually depends largely upon the section being formed as some are satisfactorily and easily produced without the use of any straightening device while others cannot be formed without some means of controlling the formed sheet of metal

(Continued on page 33)

The Apprentice Training School As Developed By An Outstanding American Manufacturer

By W. W. TANGEMAN, Vice President
Cincinnati Milling Machine & Cincinnati Grinders, Inc.

AS industry continues to make steady progress, the need for more and greater skilled men is clearly set forth. Machines, such as those built in our own shop, are becoming more complex and the type of workmanship more refined. The demand for a really fine job on the part of each mechanic is strong. For good, sound workmanship is necessary to the success of any company.

"How best to meet this problem?" is the question which industry must ask itself. And the answer seems to be through the operation of well-planned and capably-operated Apprentice and Trade Schools by the leading companies in industry.

Although the management of our Company has always fostered apprentice training in the shop, the scope and purpose of our Apprentice School was redefined a short time ago, with the above problem directly in mind. Other prominent companies have been, and are, doing the same. Notable among these schools is the Henry Ford Trade School for boys from 12 to 18 years, the Henry Ford Apprentice School for those of 18 to 25, the Chevrolet Apprentice School, the school of Newport News Navy Yard, that of General Electric, and many others.

Apprentice Training in Industry

Apprentice training is one of the oldest forms of education known to man. Down through the ages, the shipbuilder, weaver, wheelwright, cooper, wagon and coach maker, smith, gun maker and masters of other trades obtained their training by serving an apprenticeship. Today with machinery so far advanced and workmanship calling for increased skill, apprentice training is more important than it has ever been before. The individual opportunity for the thoroughly trained craftsman yearly increases.

When a young man is ready to complete either his high school or college career, his thoughts should naturally turn to the problem of selecting a life work . . . a work in which he will be satisfied, happy and able to progress through the years.

Like every real American boy, he has probably traded marbles as a youngster, built wagons and sleds, tinkered with radios, and possibly even rebuilt that old dilapidated automobile for which he worked and saved so long. These things he did in the spirit of fun—as a sort of hobby—nothing of great importance rested on how well or how poorly each job was done.

But, youthful "tinkering" always de-

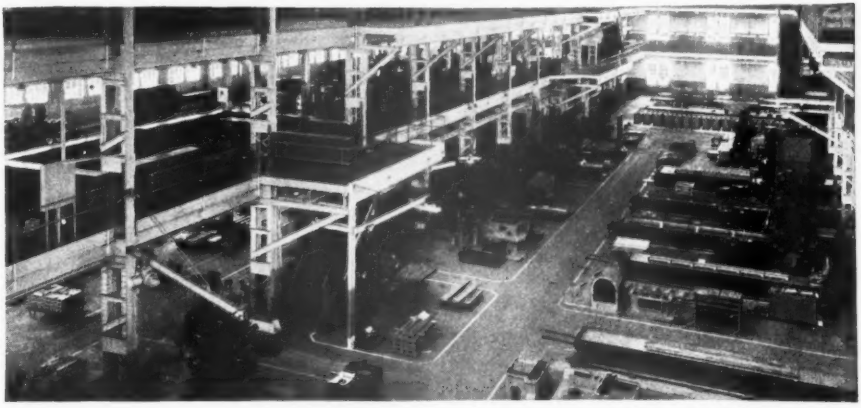
A Company's Tradition

● From the early days, half a century ago good workmanship has been a tradition at the Cincinnati Milling Machine Company. The development of superior skill and shop practice was recognized as the foundation for the building of better and yet better machine tools. Seeking to accomplish this, various forms of technical and shop training have been fostered by the Company during the past. From these origins springs the Training School of today.

We believe that it provides a real opportunity for alert, earnest young men who will work to fit themselves for future accomplishment. We believe that it will further knowledge and appreciation of fine work and be reflected in future progress of Company, product, and men.

FREDERICK V. GEIER,
President

The School's Ideal Location—on the Balcony in the Cincinnati Grinders Plant



velops and brings to the surface certain talents possessed by a lad. Whether he knows it or not, the more a boy "plays" with tools, the better he is prepared for a definite work when he leaves school.

However, a boy is generally 17 or 18 years of age—frequently even close to 20—before he seriously begins to ask himself: "How am I going to earn a living?"—"What fields offer the best opportunities?"—"What kind of job am *I* best suited for?"—"For what company should I work when I do decide what I want to do?"

Young men who wish to become master craftsmen, or who wish to be proficient in any phase of the business, must be trained in the fundamentals of the mechanic's trade. They must learn that in spite of all the broad development which has taken place in industry, *there has never been found a substitute for practical experience and good craftsmanship.* All progress in mechanical engineering depends upon the collective basic knowledge possessed by good craftsmen. Future craftsmen must also learn that Cleanliness, Orderliness, Safety, Accuracy and Speed are the foundation of good work. They can best learn these fundamentals in an Apprentice School which is operated on a definite program planned by experienced men.

(Continued on page 26)

Apprentices do work which is of actual value to the Company. They produce new tools, repair tools, and overhaul machinery.

Are Your Depreciation Reserve Policies Sound?

The Revenue Act of 1936 Forcefully Brings to the Front the Necessity of Careful Analysis.

By JOHN W. O'LEARY,
President, Machinery and Allied Products Institute

FREQUENT review of depreciation reserve policies of a corporation is made necessary by many changing factors, the principal one of which is legislation. Laws enacted in 1936 have a far-reaching effect upon reserves, dividends, taxes, costing and commodity pricing. Another important factor is the constant development of higher standards for the product manufactured which place greater demands upon plant and equipment, and greatly affect obsolescence and depreciation rates.

American industrial executives face the necessity of re-examining the status of their capital accounts, and of developing accurate, sound and adequate depreciation reserve policies.

The principal new factor is the Revenue Act of 1936, which includes in addition to normal federal corporation income tax an undistributed surplus tax ranging from 7 to 27 per cent of the undistributed book income.

Formerly, if a taxpayer failed to charge adequately for depreciation and obsolescence, his resulting maximum loss was the normal income tax on the amount by which such deduction for depreciation was inadequate. If all apparent income was then disbursed in dividends, capital impairment would have occurred, but corporations usually retained a considerable portion of apparent income in surplus, and capital impairment was avoided.

Under the 1936 Revenue Act, circumstances are dangerously altered. Not only is there the loss of normal income tax upon the amount by which depreciation deduction was inadequate, but in addition a superimposed penalty—the corporation undistributed surplus tax of 7 to 27 per cent—upon such amount of apparent or book income. If excessive dividend disbursements are made to obtain a lower undistributed surplus tax rate, serious capital impairment occurs. In event of subsequent disallowance of depreciation deductions, a further book profit results, and a dividend-paid credit cannot be retroactively applied against it.

Proof to the Bureau of Internal Revenue of justification of depreciation rates is required by Treasury Department Order 4422, and Mimeo 4170 as revised July 10, 1936. These orders carry out the present federal tax policy of increasing revenue by decreasing the tax-exempt depreciation deductions. Adequate ledgers and budgetary control of depreciation accounts are rare, and as a result of inability of the taxpayer to justify rates charged, numerous incidents are reported of forced decreases in depreciation. If facts were known and recorded there would be no justification or opportunity for arbitrary dictation of rates by government. Management is best informed on the value in use of its assets and is best fitted to establish required charges for depreciation reserves. Properly supported and recorded, the established charges become an element in determining costs, taxes and value, fully acceptable to taxing bodies.

The Robinson-Patman Price Discrimination Act prohibits discrimination in price except where based solely upon differences in *cost* of manufacture, sale or delivery, and the Vinson Naval Appropriations Act limits profits above cost to not to exceed 10 per cent on navy contracts.

Depreciation is the one element of cost paid *ahead* of use. There is failure in many instances to recognize depreciation as an element of cost as important as labor, material and overhead burdens. Depreciation is the one element of cost not generally fully known and recorded. The provisions of such Acts as these emphasize the importance of knowledge of

(Continued on page 24)

Social Security Tax Payments Begin Next Month

Here is the Federal Payroll Tax calendar for 1937. Are you prepared to conform thereto? You pay the first employers' and employees' Old Age Benefits Tax on Feb. 28, then every month thereafter. If you employed eight or more persons on twenty days of last year, you must pay one-quarter of your unemployment insurance tax to the Bureau of Internal Revenue on March 31, and quarterly thereafter.

If you have not obtained your Social Security Account Number, get it from your postmaster. If you wish further information, address your inquiry to the Social Security Board, 1712 G St. N. W., Washington, D. C.

FEDERAL PAYROLL TAX CALENDAR 1937

FEBRUARY 28, FEDERAL

Employers file Form SS-1, first monthly return (for January 1937) of employers' and employees' payroll taxes for old age benefits. Tax due and payable.

MARCH 15, FEDERAL

State officers file Form 940-A, Proof of Credit.

MARCH 31, FEDERAL

Last day for employers of 8 or more persons, on 20 days last year, each day in different week, to file return under Title IX, for unemployment insurance purposes. ¼ of tax due and payable, and quarterly thereafter.

MARCH 31, FEDERAL

Employers file Form SS-1, second monthly return (for February 1937) of employers' and employees' payroll taxes for old age benefits. Tax due and payable. File Form SS-1 monthly thereafter. Each monthly return is to be filed by the last day of the succeeding month.

JUNE 30, FEDERAL

Employers file Forms SS-2 and SS-2A, information returns, summarizing the taxable wages paid and taxes paid thereon, in connection with the old age benefits payroll taxes, for period January 1, 1937 to June 30, 1937. Thereafter such information returns are to be filed quarterly.

THE SMALLEST JOHANSSON GAGE SET

SET No. 16, consisting of 5 Blocks, will make 31 gages in steps of .0625 inch from minimum size .0625 inch to maximum size 1.9375 inches. In "B" quality with accuracy of ±.000008 inch, this set sells for only $26.50.

Catalog No. 11 lists all the Sets, individual Gage Blocks and Accessories. Fill in the coupon and we'll send it without obligation.

Manufactured and serviced in the United States by

FORD MOTOR COMPANY

Johansson Division **Dearborn, Michigan**

FORD MOTOR COMPANY, Dearborn, Michigan
Johansson Division
Without any obligation, please send me Johansson Catalog No. 11.

*Name*_____ *Address*_____

*City*_____ *State*_____

When you order or write about products described in TDM PROGRESS please mention the publication.

When you order or write about products described in TDM PROGRESS please mention the publication.

ITCO
PRODUCTS
Reg. U.S. Pat. Off.

THE

INTERNATIONAL TOOL COMPANY

J. J. KOHL
Pres.

DAYTON, OHIO

A Thought . . .

on WORKMANSHIP

Good workmanship in the Tool & Die business is very often entirely too much a matter of "lip service"—vague conceptions that are talked about, because it is the expected thing to talk about together with golf, football, politics and what have you.

Workmanship—good workmanship—is very often allowed to follow the line of least resistance with a general trusting to luck that everything will come out O.K.

But—seriously—the high grade Tool & Die shop—does have a standard of performance which is not a matter of chance. To the owner or principal operator of a first class Tool & Die shop—his standards are a vital, living thing—something he fights to maintain—moves heaven and earth to live up to.

His ideals of workmanship permeate his entire organization—make a living laboratory of crafsmanship out of what would otherwise be just another tool shop.

Incidentally—where the heart is in the work—the work is better.

NOTE—There will appear on these pages, from time to time, various "Thoughts" pertinent to business in general and the Tool and Die Industry in particular. We invite comment.

ITCO PRODUCTS
Reg. U.S. Pat. Off.

Our Specialty—
JIG,
FIXTURE,
DIE,
GAGE
AND
MACHINE DESIGNING
—o—
COMPLETE
TOOL ROOM
AND
MACHINE SHOP
EQUIPMENT
—o—
Subsidiaries—
INTERSTATE
TOOL CO.
DETROIT
DIES AND TOOLS
NATIONAL
PATTERN WORKS, Inc.
DAYTON, O.
WOOD AND METAL
PATTERNS

When you order or write about products described in TDM PROGRESS please mention the publication.

TDM Contract Shops Continue To Buy New Equipment

Star of Detroit Adds Cincinnati Openside Planer

TOOL Die Machine Contract Shops continue to increase their facilities and broaden their range of service with the addition of new equipment. Noteworthy in this respect is the installation of a *Cincinnati Hypro Openside Planer* in the shop of the Star Tool & Die Works of Detroit.

Nominal dimensions of this planer are 72" x 72" x 12 feet, but it will accommodate and handle efficiently the planing of pieces 73" high and 91" wide. The cross-rail carries two heads and there is one side head arranged for reversible motor drive, including elevating motor, rail clamping motor, 35 HP variable voltage motor, with speed range from 100 to 1200 RPM. There is a motor generator set consisting of two 30 KW generators, one for 230 volts direct current and the other with exciter for 115 volts direct current. Both generators are driven by 100 HP, 220 volt, 3-phase 60 cycle, alternating current motor complete with hand compensator.

The planer table is equipped with renewable tee-slots. There is a selective dial feed to all heads, radial bearings at end of rail screws, herringbone gearing, including bull wheel and rack dual control and a separate down feed to each rail head. Bushings are made of *Hibbo* bronze, while *Strenus* metal has been used for the tool blocks and clapper boxes.

The planer bed has an overall length of 27 feet and the machine weighs considerably in excess of 100,000 pounds.

Having previously installed other new machine tool equipment, including a large *Keller* automatic tool room machine for profiling, and *Giddings & Lewis* boring mill equipment, Star of Detroit now becomes one of the group of TDM contract shops thoroughly equipped for the manufacture of large dies.

You Do Not Pay For The Hole

WHEN YOU USE

BISCO

TOOL STEEL TUBING

Non-shrink—Oil Hardening

for

Ring dies — Spacers — Bushings

Stock up to 14" O. D. — 2" Wall

We stock also:

- S. A. E. 52100 Tubing
- S. A. E. 4130X Tubing
- A. S. M. E. Boiler Tubes
- Mechanical Tubing
- Stainless Tubing

THE

BISSETT STEEL CO.

Mfrs. of BISCO *Tungsten Carbide Dies and Tools*
Fine Tool Steels

CLEVELAND

Swiss Jig Borer Installed By Tools & Gages, Inc.

Tools and Gages, Inc., of Cleveland, informs us that installation of its new *Swiss Jig Borer* has been completed and the machine is in operation. Noted for its extreme accuracy, this machine makes possible the spacing of holes ± .0001" in an area 27" x 40".

Enterprise Machine Parts of Detroit Enlarges Facilities

From the Enterprise Machine Parts Company of Detroit comes word of extensive additions to shop equipment. In the list are:

1 *Universal* Horizontal Boring Mill, 3-spindle, 33" collar.

1 *Monarch* 36" x 10 feet tool room lathe.

1 *Kearney & Treaker* vertical milling machine, *3K Model.*

1 *Edlund* 3-spindle drill.

The Enterprise Machine Parts Co. makes a specialty of machine tool overhaul.

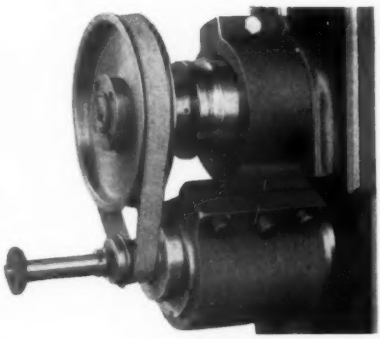
When you order or write about products described in TDM PROGRESS please mention the publication.

High-Speed Attachment Steps Grinding Machine Speed Up To 18,000 RPM

MANY shops operating grinding machines built primarily to use the larger sized abrasive wheels which operate at comparatively low speeds will be interested in the *Parker* High Speed attachment. This attachment is precision built and uses *Parker* four-point contact bearings.

The illustration shows how a *Parker* High Speed attachment converts the *Brown & Sharpe* #2 surface grinding machine into a grinder adapted for the use of small wheels. The speed is stepped up to 18,000 RPM, making it possible to grind small work which could not possibly be done with the grinding machine itself.

Parker High Speed attachments for *Brown & Sharpe* #2 surface grinders and *Hammond* surface grinders are manufactured by the Majestic Tool & Mfg. Company, 2948 Woodbridge St. East, Detroit, Mich.



Brown & Sharpe #2 Surface Grinder with Parker High-Speed Attachment

SAFETY WHEELS FOR PRODUCTION AND GENERAL PURPOSE WORK ON PRECISION MACHINES... CYLINDRICAL... SURFACE . . . FACE AND CENTERLESS GRINDERS.

Assist in Lowering Costs by Cutting Freely and Lasting Longer.

DON'T FORGET WE ALSO MAKE SNAGGERS

The SAFETY GRINDING WHEEL & MACHINE Co.

2483 Columbus Avenue, Springfield, Ohio

When you order or write about products described in TDM PROGRESS please mention the publication.

DANLY PRECISION DIE SETS

SAVE YOU MONEY—HERE'S WHY:

The Danly Catalog makes it easy to select the proper die set for the job at hand. Ask for your copy.

● True, you pay a little more for a Danly Precision Die Set because the guide posts and bushings are perfectly fitted to within ± 1/10,000″. That's what gives you the absolute accuracy of die movement that means perfectly made parts. It's one of the reasons why Danly Precision Die Sets can operate at a higher rate of speed—produce more parts before regrinding—protect the dies, as ordinary sets can't. Try a Danly Precision Die Set next time and prove to yourself the difference in long-time economy.

DANLY MACHINE SPECIALTIES, Inc., 2121 S. 52nd Ave., Chicago, Ill.

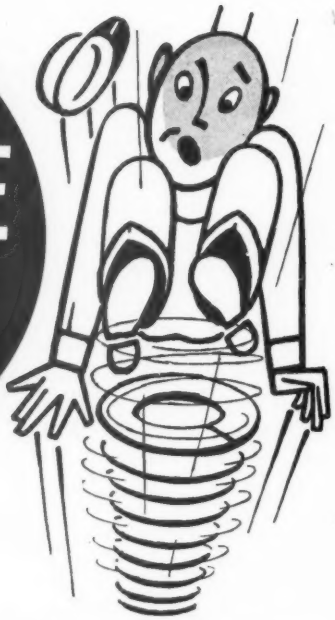
BRANCHES:

Long Island City, N. Y., 36-12 34th Street
Dayton, Ohio, 990 E. Monument Avenue
Detroit, Michigan, 1549 Temple Avenue
Rochester, N. Y., 16 Commercial Street
Cleveland, Ohio, 1444 E. 49th Street
Philadelphia, Pa., 3913 N. Broad Street

DANLY PRECISION DIE SETS

When you order or write about products described in TDM PROGRESS please mention the publication.

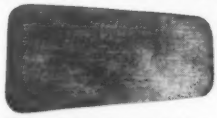
BUY PRESSURE NOT JUST STEEL!



You'll get plenty of kick out of these new Danly flat rounded springs—they're new and entirely different—livelier—stronger—longer lasting! They're engineered to combine a maximum flexibility with carrying capacity and compression.

DANLY FLAT ROUNDED DIE SPRINGS

● **The reason they're better lies in the fact that they are made of a special analysis keystone wire which, in destruction tests covering three years, showed the highest fatigue life ever known in spring steel. The keystone wire when coiled, takes a rectangular cross-section to give it equal strength on both inside and outside spring diameters—greater carrying capacity for hole size. It means longer life and fewer spring replacements for you.** ***The new Danly Spring Chart describes it more fully. Send for your copy today.***



The special analysis steel wire is drawn in this keystone shape.

When coiled, it takes this shape to give it greater strength, longer life. When you start with ordinary flat wire the exact reverse is true.

DANLY MACHINE SPECIALTIES, Inc., 2121 S. 52nd Ave., Chicago, Ill.

BRANCHES:

Long Island City, N. Y., 36-12 34th Street
Dayton, Ohio, 930 E. Monument Avenue
Detroit, Michigan, 1549 Temple Avenue
Rochester, N. Y., 16 Commercial Street
Cleveland, Ohio, 1444 E. 49th Street
Philadelphia, Pa., 3913 N. Broad Street

DANLY DIE MAKERS' SUPPLIES

When you order or write about products described in TDM PROGRESS please mention the publication.

TOOL · DIE · MACHINE
PROGRESS

Published in the interest of
Manufacturers and Users of
CUSTOM-BUILT TOOLS, DIES, MACHINES AND ACCESSORIES

GEORGE J. HUEBNER . . . . . Editor
P.O. Box 3561, Cleveland, Ohio
Telegrams and Special Delivery Mail to
3553 Shannon Road

Official Publication of the
SPECIAL TOOL, DIE AND MACHINE SHOP INDUSTRY

3500 Members in the U.S.A.

Special Tool, Die and Machine Shop Institute
A National Trade Association

President—F. S. BLACKALL, JR.
Pres.-Treas., Taft-Peirce Mfg. Co.
Vice-President—N. A. WOODWORTH
Pres.-G.M., Ex-Cell-O Aircraft & Tool Corp.
Secretary—GEORGE J. HUEBNER
Cleveland, Ohio

How Will TDM Industry Fortify Itself Against New Federal Regulations?

ON the opposite page is the reproduction of a letter directed to members of the Special Tool, Die & Machine Shop Industry by the Institute president, Frederick S. Blackall, Jr.

We acknowledge gratefully Mr. Blackall's generous remarks about Tool-Die-Machine PROGRESS—"this little magazine has done an outstanding job during recent months." He urges as one reason for a prompt payment of Institute dues the building up of sentiment in favor of the tool, die and special machinery builder and the strengthening of the price structure of our Industry which are being carried forward by the Industry publication. There is no question but what this service "means dollars and cents" to the Industry and every member of it. Mr. Blackall is familiar with the fact that it has not been easy to bring the publication to its present point of development. But thanks to a group of "old faithfuls," whose moral and financial support have made possible the present development, we now have an Industry publication well on its way to achieving worthwhile results.

But we did not intend to say so much about the relationship of Institute dues to Tool-Die-Machine PROGRESS as about the relationship of Institute dues to the NRA, or what we may have in its place. That we shall have Industry regulation of some form is no longer seriously doubted by any Industrialist who is observant of the trend of the times.

In his first message to the Congress, the President characterized the broad objectives of the National Recovery Act as sound. Its difficulties, he said, arose from the fact that it tried to do too much, providing for "the same agency to regulate the lengths of working hours, minimum wages, child labor and collective bargaining on the one hand, and the complicated question of unfair trade practices and business control on the other." Mr. Roosevelt believes that the problems intended to be solved by the NRA are still with us, and as he believes this he will unquestionably advocate legislation to overcome them.

Thank You for Prompt Payment

Invoices for 1937 Institute Dues were hardly mailed befor checks began to arrive.

Will those who have responded so promptly please accept this as our acknowledgement—with THANKS.

GEORGE J. HUEBNER,
Sec'y-Treas.

No one knows before hand what form this legislation will take or what agencies it will set up, but this would appear to be a reasonable deduction—that the regulation of working hours, minimum wages and collective bargaining will be achieved through one agency, and "curbs on monopoly and unfair trade practices" by another.

The action of one state after another in passing legislation to make effective the National Social Security Act must indicate to us that, after all, the legislatures of the respective states intend to stay in step with the Federal government and if it is necessary to have such cooperation to bring about the changes

(Continued on page 23)

SPECIAL TOOL, DIE & MACHINE SHOP INSTITUTE

GUARANTEE TITLE BUILDING

CLEVELAND, OHIO

January 1, 1937

To MEMBERS of the
Special Tool, Die and Machine Shop Industry:

Dues for the year 1937, covering membership in the Special Tool, Die & Machine Shop Institute, are now payable. The amount is $10.00.

We earnestly urge that you forward your remittance to us promptly in order that the work of the Institute may go forward without interruption. The events of recent months can leave no doubt in the mind of any reasonable man that the continuance of a strong central trade association as a focal point of contact with the Federal government is absolutely essential. Talk of the revival of N.R.A. is already widespread. Beyond this, the educational work which the Institute has been performing and hopes to continue to perform through the magazine Tool-Die-Machine PROGRESS is a service which means dollars and cents in your pocket, not alone in building up a sentiment in favor of the TOOL, DIE and SPECIAL MACHINERY builder, but in strengthening the price structure of our industry.

This little magazine has done an outstanding job during recent months, with all too little assistance, and it would be a calamity to have it discontinued. Yet this es exactly what will happen unless Industry members come forward with financial support, for the magazine is not yet self-sustaining, despite its increasing appeal to advertisers. Its circulation includes thousands of firms and individuals who are buyers and users of our products, to whom we are directing propaganda which should increase their tendency to deal with our Industry.

The dues are small; the service which your contribution will perform is great. We are counting on you. Won't you mail your remittance now to the Special Tool, Die and Machine Shop Institute, Box 5561, Cleveland Ohio?

Very truly yours,

Francis J. Blaskell, Jr.
President

FSBjr/p

When you order or write about products described in TDM PROGRESS please mention the publication.

38 Different Attachments May Be Used with 1937 Model South Bend Workshop Precision Lathe

THE 1937 model *South Bend* 9-inch Workshop Precision Lathe is fully described in a new 24-page catalog with over 150 illustrations. There are many new styles, features, and applications of this new back-geared screw cutting lathe.

The 9-inch Workshop Lathe for 1937 is offered in seven different styles to fit a wide number of installations. These new styles are: (1) the adjustable belt tension horizontal motor drive (2) the countershaft drive (3) the underneath belt motor drive (4) the pedestal motor drive (5) the tool room lathe (6) the 9"-11" swing workshop lathe (7) the plain type horizontal motor drive.

A number of pages, with many illustrations, show the methods for obtaining and testing the high degree of accuracy for which these lathes are noted. Sixty-four major tests are made to insure accuracy in the alignment of all parts to within .001".

This new lathe cuts screw threads from 4 to 40 per inch, and with a fine thread cutting attachment the number is increased to 80 threads per inch. A precision lead screw cut on a special machine allows cutting the most accurate threads.

Several illustrations show the many new improvements on the back-geared headstock. These improvements include a twin gear reverse for right and left hand threads and feeds, large spindle bearings adjustable for wear, ball thrust bearing on the headstock spindle, take-up nut for eliminating end play of headstock spindle, hollow headstock spindle machined from a solid bar of alloy steel, etc.

The bed is a one-piece casting of steel and nickel iron, and bed lengths are offered in 3 ft., 3½ ft., 4 ft., and 4½ ft. The Workshop Lathe bed has 3 V-ways and one flat way.

The 9-inch Workshop Lathe takes 38 different attachments for handling all types of metal work. A number of pages illustrate and describe these different attachments, which include draw-in collet chuck, turret, gear cutting, taper, indexing, milling and key way cutting, grinding, etc.

Write the Technical Service Department, South Bend Lathe Works, South Bend, Indiana, mentioning this magazine, and receive a copy of this catalog.

STRONG-ARM JOE SAYS:
I'M NOT TAKIN' ANY CHANCES
Did you ever ruin a good fountain pen with poor ink? Well, if you've had that experience, you know just how I feel about die work.
When we build expensive dies, I'm taking no chances. I order MAC-IT socket-head cap screws and stripper bolts.
Then we sock 'em down tight and know darn well they'll stay put.
Make the Mac-it test.
Write for free samples.
The Strong, Carlisle & Hammond Co.
1392 West Third Street, Cleveland, Ohio.
Mac-its
PRONOUNCED "MACK-ITS"
The Only COMPLETE Line of Heat-Treated, Alloy Screws
3

When you order or write about products described in TDM PROGRESS please mention the publication.

How Will TDM Industry Fortify Itself?

(Continued from page 20)

the President deems necessary for the correction of business abuses, that co-operation will probably be coming forth in some form or other.

Now, it is frequently advanced as an argument that the business of many of the shops in the TDM Industry does not extend beyond their individual state borders. On the other hand it is a fact that more and more TDM shops are developing specialties which they ship nationally and thus are engaged in business which can be very definitely designated interstate. That the larger units in the TDM Industry would come under any national legislation which might be passed is self-evident. Inasmuch as smaller shops and those whose operations do not extend beyond their own states are in direct competition with these larger units, there could be no uniformity in the regulation of hours and wages and unfair trade practices unless such a regulatory law governed all classes of shops—large, small, state and interstate.

To make certain that such new legislation, if and when it is passed, is considerate of the rights of all Industry members but that it also imposes identical restrictions upon them all, there must be an Industry organization following carefully all developments, which when the time comes is prepared to step into the picture and obtain the very best deal that is possible.

In the discussion of hours and wages there is the factor that much of our activity in the manufacture of tools, dies, machines and kindred products is preliminary to and facilitates high production, with its ever-increasing employment of workers. TDM products must frequently be manufactured under what might be designated emergency conditions, and during such periods there is invariably a shortage of skilled workers.

We come, then, to this decision—shall we as an Industry go along haphazardly, unorganized, unprepared to present our side of any question which may arise, or shall we develop our Institute organization to the point where it is possible to

(Continued on page 31)

The PENINSULAR STEEL COMPANY

presents a full line of

- Cold Finished Steel Bars
- Bessemer Open-hearth Alloy

in

ROUNDS
•
HEXAGONS
•
SQUARES
•
FLATS
•
SPECIAL SHAPES

in its Warehouses:

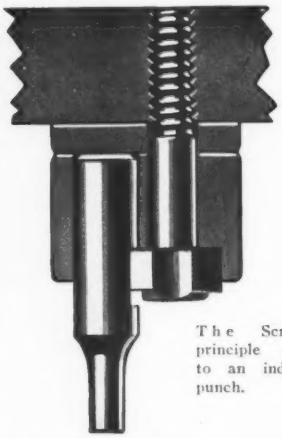
CLEVELAND: 1470 Lakeside Avenue CHerry 7173
DETROIT: 1030-36 McDougall Avenue Fitzroy 5496
TOLEDO: 1915 Spielbusch Avenue MAin 5171
DAYTON: 905 East 3rd Street ADams 3121
GRAND RAPIDS: 149 Cherry Street East Telephone: 8-7723

and through sales representatives:

CHICAGO: Wm. N. Phares, 1 No. Crawford Ave. Van Buren 4556
AKRON: James A. Shattuck, 42 East South St. Hemlock 2193
COLUMBUS: J. E. Littleton, Columbia Bldg., 35 E. Gay St., Adams 5167

When you order or write about products described in TDM PROGRESS please mention the publication.

The MORE DIFFICULT your PUNCH PROBLEM... the BETTER WE LIKE IT



The Screwlock principle applied to an individual punch.

- **A new product invariably gets the toughest jobs.**
- **The HOVIS RETAINER has had plenty of them.**
- **Group plates with as many as 156 punches are in successful operation.**

The SCREWLOCK with its positive punch lock assures a "straight thrust and pull" action with no side strain. Result: Longer ACCURATE operation.

The SCREWLOCK provides the "quickest change" method. Partial turn with standard socket wrench really releases punch.

Special applications can be made to any requirements.

Our prices will interest you. May we quote? Illustrated circular sent on request.

Hovis Screwlock Co.
3129 East Larned St., Detroit, Michigan
We will consider Pacific coast representation by responsible firm.

Depreciation Reserve Policies

(Continued from page 12)

costs—knowledge of the productive value of capital assets as they change with technological advancement and with wear from use.

The prime objective of the Committee in its study of practices and requirements has been to formulate a depreciation reserve policy acceptable to management, finance and legislative bodies, cutting through the complexities which have gradually developed since the enactment of the first corporate income tax law.

This policy, expressed in these three points, is recommended for adoption by industrial management to govern depreciation reserves.

1. *Purpose*

Since investment of capital in an asset is in reality prepaid depreciation expense, the principal purposes of establishing depreciation reserves through current charges to income are:

(a) To maintain capital investment intact.
(b) To recover cost from the selling price of the product of the asset during its useful life.

2. *Method of Accumulation of Depreciation Reserves*

Nationally standard rates or methods are not practical.

The prediction of the probable life and productiveness of an asset is essentially a management problem requiring, in each individual case:

First, consideration at the time of acquisition of the asset of

(a) Wear because of use.
(b) Obsolescence of asset.
(c) Obsolescence of product.
(d) The rate and method of recovery of the cost of the asset.

Second, re-determination of the useful economic life of the asset at periodic intervals to reconcile predicted life to actual life in practice.

3. *Use of Depreciation Reserve Funds*

Depreciation reserves accumulated from the selling price of a product of an asset should be subjected to the same budgetary control and accounting record as other elements of production cost.

The executive officer responsible for financial policies of the company should authorize the installation of a "plant

When you order or write about products described in TDM PROGRESS please mention the publication.

ledger" in which would be compiled the necessary data concerning each piece of fixed or major equipment, together with auxiliary equipment such as shafting, belts, pulley, etc. by group units, to show:

1. Description of unit.
2. Date installed.
3. Cost:
   (a) Of unit
   (b) Of installation—estimated if necessary.
4. Plant location.
5. Type of work performed:
   (a) At present
   (b) Any change-over from original purpose.
6. Report of superintendent or foreman of present use of unit and present condition.
7. Opinion of superintendent and foreman as to further useful life.
8. Other pertinent data which would fully inform management of the character of the equipment and the condition of that equipment from an operating standpoint with regard to product now produced.

There should be an assignment of values to these units of equipment which, in total, will agree with either the gross value less accumulated depreciation reserves as shown on the financial books, or the net value of the fixed assets carried on the financial books. It probably will be necessary in any case to apportion, somewhat arbitrarily, these dollar values.

The set-up of initial information for new equipment purchased should permit of historical data from which to determine in the future the condition and value in use of this equipment.

In most cases, depreciation deductions of the past, as accumulated in reserves, are probably not possible of identification in corresponding asset accounts or as capital losses. Replacement of equipment costing in excess of current provision for depreciation therefore will probably be necessary out of new capital funds as the present tax laws which penalize undistributed earnings will impose possibly undue hardships on the retention of earnings in the business.

In the future the accounting records

(Continued on page 33)

Always Use

COLONIAL

Drill Jig Bushings

A. S. A. Standard

- MADE OF HIGH GRADE STEEL
- ACCURATE • DEPENDABLE
- PROMPT DELIVERY

Keep our specification sheets and prices on file.

COLONIAL BUSHINGS, INC.

147 Jos. Campau Ave. DETROIT, MICH.

New Lower Prices

ON CEMENTED CARBIDE TOOLS

A SHOP HEAD-ACHE WE CURED

1. Four castings to be machined—irregular shape, poorly moulded—thin sections had chilled, others warped.

Result: 32 hours required to machine.

2. We fabricated a special Lyon-design Carbide tool for second lot.

Result: Only 16 hours required to machine, with closer accuracy and better finish. Tool paid for itself plus a profit.

Let us show you how Lyon-design Carbide Tools will cut your costs.

LYONS MACHINE COMPANY

5601 Tillman Ave. WOodbine 2440 Cleveland, O.

When you order or write about products described in TDM PROGRESS please mention the publication.

The M-B "Super" Speed Air Grinder—Weight, 8½ Ounces

Thrilling Speeds ● Amazing Power

Operates on Air Pressures of 40 to 100 Pounds ● Speeds of 35,000 to 100,000 R.P.M.

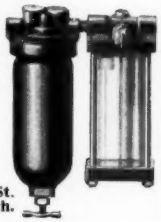
Revolutionary Performance

The M-B Automatic Air Line Lubricator and Filter

First removes all foreign matter, dust, pipe scale, moisture, etc., from the air line, then saturates the air with any desired volume of oil.

●

Eliminates Costly Shut-Downs



M-B PRODUCTS 130 E. Larned St. Detroit Mich.

Apprentice Training School

(Continued from page 11)

Such is the purpose of our new Apprentice School.

How Our School Functions

Since the very beginning of our Company, the management has earnestly fostered apprentice training. Many of our executives and foremen have risen from the ranks of apprenticeship to their present positions of responsibility. Throughout these many years, improvements have been made in our apprenticeship system until, today, we have a special trades school entirely removed from the main shop, where you will find all of the various types of machine tools necessary to a complete course in the mechanical arts.

Carefully planned work in machine shop practice under the supervision of experienced journeymen instructors and an educational program conducted in cooperation with one of Cincinnati's educational institutions form the basis of our apprentice instruction.

The present training program is so arranged that young men with all degrees of preparation ranging from high school to college graduates may be enrolled. The new student may be accepted into the course at any time during the year.

Those in training are divided into two groups; namely, the Regular Mechanical Apprentice Group and the Advanced Training Group.

The regular Mechanical Apprentice Group is for young men of at least 18 years of age, and possessing a high school education or its equivalent. At the completion of approximately four years of apprentice training, members of this group will be qualified as journeymen mechanics.

The advanced group, consisting of college graduates, cooperative students from approved technical universities, and young men with a technical background accepted by the Apprentice Training Committee, is prepared through a technical shop training for specialized work in one of the many divisions of our Company. For example, advanced students are trained for work in our engi-

The Geo. H. Porter Steel Treating Co.

Heat Treating — *Carbonizing*

Annealing — *Case Hardening*

TOOL WORK OUR SPECIALTY

1225 Marquette St. **Tel. HEnderson 6601**

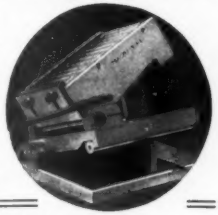
CLEVELAND, OHIO

When you order or write about products described in TDM PROGRESS please mention the publication.

Traveling In Good Company . . .

★ An impressive number of the country's largest corporations and a long list of small, aggressive manufacturers are now using the MAGNA-SINE. It is cutting their grinding costs as it will cut *yours*.

The MAGNA-SINE



THE ROBBINS ENGINEERING CO., 637 Mt. Elliott Avenue, Detroit . . . . . .

neering, production, research departments, etc.

In conjunction with all of this practical training, educational requirements must also be obtained.

The Selection of Boys

The Training School comes directly under shop supervision as far as production is concerned. Training schedules, methods of instruction, selection of instructors, selection of boys, etc., are under the jurisdiction of the Training School Committee. This Committee consists of five experienced officials selected by the Company's management.

All applicants for admission into the Apprentice Training Group must be of good moral character, and be able to meet the age and educational requirements. Employment can only be given to those applicants, all other conditions being satisfactory, whose physical examinations do not reveal any defects, which in the opinion of the Company, might prove detrimental to their efficiency and safety.

Probationary or Trial Period and Agreement

All accepted applicants serve a probationary or trial period of not less than six weeks nor more than twelve weeks.

At the conclusion of the first six weeks, the Training School Committee will interview the probationer and carefully review his progress. If the Committee decides that the student is satisfactory, he is permitted to sign an agreement, also signed by his parent or guardian, and an official of the Company, in which he promises to faithfully carry out the program of apprenticeship. However, if the Committee feels that the probationer has not progressed sufficiently, he may be granted an additional six weeks in which to demonstrate his qualifications.

If in the opinion of the Committee, the probationer does not have the necessary mechanical aptitude, or if he does not measure up to the standards of apprenticeship, his resignation shall become effective.

(Continued on page 28)

ALLOY STEELS

HY-TEN S.A.E.

ALSO POPULAR ALLOY GRADES

SUITABLE FOR A WIDE VARIETY OF USES

HY-TEN "M" TEMPER

Oil Hardening Alloy Steel

For parts requiring great hardness, density of structure, resistance to wear, combined with toughness.

HY-TEN B No. 3X

.50 C. High Man.-Chrome-Moly

Machinable in heat-treated condition at hardnesses up to 42 Rockwell "C" (401 Brinell) or even higher.

Warehouses CAMBRIDGE CHICAGO CLEVELAND

WHEELOCK, LOVEJOY & CO., Inc.

SEND FOR DATA SHEETS

Warehouses DETROIT NEWARK BUFFALO

When you order or write about products described in TDM PROGRESS please mention the publication.

STAMPINGS **TOOLS • DIES**
Our Business . . . to serve you
THE BOEHM PRESSED STEEL CO.
2225 West 63rd Street *Cleveland, Ohio*

Apprentice Training School

(Continued from page 27)

At the time that the regular apprenticeship is signed, full credit will be granted for the period of hours worked during the probationary period.

Training School Instructors

The success of any school largely depends upon the type of men chosen as instructors. Those men who are instructors in our school have been thoroughly tested as good mechanics; most of them hold records of long service with the company.

Kind of Work Performed in the School

All work is taken from regular production schedules and is of a practical nature and value, such as:

1. Standard production of a simple nature. 2. New tools, jigs, and fixtures. 3. Tool repairs. 4. Overhaul of shop machines. 5. Petty orders. (Repair parts for our former machines.) 6. Miscellaneous salvage work from the entire plant.

Four Groups of Students

The members of the Apprentice School are divided into four groups, or classifications. They are:

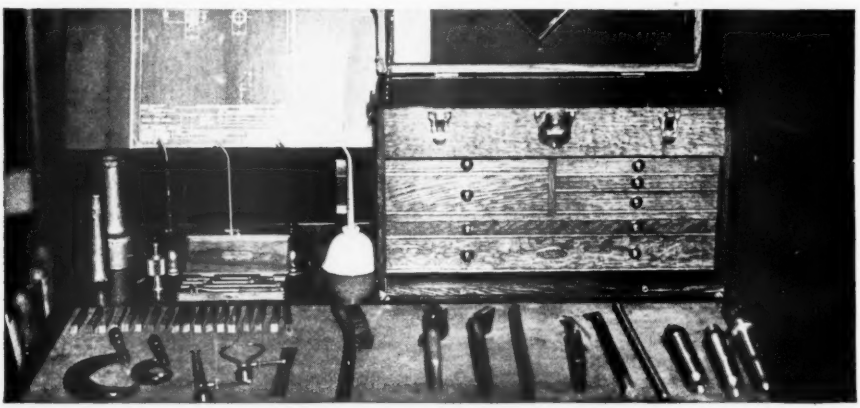
Group 1. A four-year regular Apprentice training, offered to high school graduates. Their training consists of the following general program:

6 to 12	weeks	Probation
12	"	Drill Press
18	"	Turning and Boring
28	"	Grinding
28	"	Milling
6	"	Tool Grinding
8	"	Inspection
12	"	Foundry
8	"	Heat Treatment
20	"	Miscellaneous Machines
8	"	Scraping
40	"	Assembly

The following educational requisites must be possessed by members of this group. If the boy does not have them he is required to attend evening classes at the Ohio Mechanics Institute, his tuition at that school being paid by the Company. His educational program follows:

Plane Geometry	Mechanical Drawing
Trigonometry	Chemistry
Advanced Algebra	Heat Treatment
Physics	English
Strength of Materials	

Group 2. A three-year course for college graduates, or men with approved technical background. Their training is



An Apprentice's Set of Tools and Tool Box.

When you order or write about products described in TDM PROGRESS please mention the publication.

Help Your Men to Help You! • • •

When you encourage your machinists, tool, die and pattern makers to care for their good tools in a *Gerstner* High Grade Tool Chest, you will be repaid with increased output and with a better quality of work. . . . *Help the men choose their chest from Free Catalog.*

Gerstner Tool Chests • 56 Columbia Street Dayton, Ohio

approximately as follows:

8	weeks	Drill Press
12	"	Turning and Boring
32	"	Cylindrical and Surface Grinding
32	"	Milling Machines
10	"	Tool Grinding
8	"	Inspection
12	"	Foundry
8	"	Heat Treating
30	"	Assembly and Vise Work

All students in the advanced group (2) must have or acquire such educational subjects as may be required by the Committee. These include:

Machine Design
Heat Treatment
Factory Management
Cost Accounting
Economics
English
Business Administration
Material and Production Control
Time and Motion Study
Human Relations in Business

Group 3. Co-operative students from the University of Cincinnati, who alternately attend school and work, according to the university schedule. The shop training which these men will receive will be the same as that given to the advanced students (2). The educational training which they receive at the university will cover the requisites for advanced students.

Group 4. Co-operative students from the Ohio Mechanics Institute, who alternately attend school and work, according to the O. M. I. schedule. Their shop training will be the same as the regular apprentices in Group 1. Their educational requirements will be the same. After graduation from the Ohio Mechanics Institute, they will be asked to sign an apprentice contract and complete their required 9,120 hours of training.

In addition to the educational program which is followed in the classrooms of the Ohio Mechanics Institute and in our own Apprentice School, the school itself maintains a lending library of our Com-

(Continued on page 34)

A COMPLETE *Organization of Designers and Builders of* TOOLS · DIES SPECIAL MACHINERY

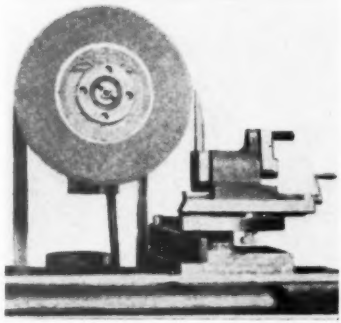
Our strictly modern equipment includes:

- 3 Lucas Precision Horizontal Mills — largest No. 42 oversize pattern.
- No. 6 Swiss Jig Borer — the largest capacity.
- Gray Maxi-Service Openside Planer — table capacity 72" x 240".

May we estimate your work?

THE BUNELL MACHINE & TOOL CO.
1600 East 24th St. Cleveland, Ohio

The Royal Dresser



. . . quickly and accurately dresses grinding wheels in Concave and Convex forms, Angles and Radii or combinations.

Time saved by not having to set up inadequate fixtures easily pays for the Royal.

Write for circular and price.

ROYAL GRINDING WHEEL DRESSER COMPANY
Box B Royal Oak, Michigan

When you order or write about products described in TDM PROGRESS please mention the publication.

GROBET
SWISS FILES

★ GROBET SWISS FILES have won a reputation for supremacy wherever exact and precise work must be done with files.

Ask for our catalog YN, the most complete of its kind, showing more than 4,000 different shapes, sizes and cuts of precision files, also files for filing machines, rotary files, etc.

GROBET FILE CORP. OF AMERICA

3 Park Place New York City

WITH THE *Greatest of Ease*

(PATENTED)

The Hamilton Portable Elevating Table

- Moves heavy dies, jigs and fixtures from machine to machine
- Levels and supports overhanging pieces of work
- Transfers dies from shelf to press in production shops
- Always saves time and labor
- Safe — Indispensable — Inexpensive

Two sizes: 2000 lbs. and 5000 lbs. capacity

Write for circular

THE HAMILTON TOOL COMPANY

222 North B Street Hamilton, Ohio

Tool · Die · Machine

PROGRESS

Advertising Volume

has increased

463%

in 10 Months...

Number of

Advertisers

has increased

583%

in 10 Months

The Reason?

Its appeal is different . . .
It has a personal touch . . .
Every one is interested in seeing it grow . . .
And in the meantime . . .

IT SELLS THE GOODS

Rates are moderate

Go along with us. *Address:*

BOX 3561

CLEVELAND, OHIO

When you order or write about products described in TDM PROGRESS please mention the publication.

New Automatic Welding Torch Weighs Only 13 Oz.

A GREATLY improved Automatic Welding Torch is now being offered to manufacturers on a two weeks' free trial plan, in order that thorough tests may be made in the prospective purchaser's own plant, on his regular welding operations.

This new torch weighs only 13 oz., and is designed with a special gas tight swivel which enables the operator to weld in any direction without changing the angle of the torch handle. It automatically shuts off to a pilot light when not in use, and automatically comes back to full flame when operator is again ready to weld—without the need of further readjustment. It has no mechanism inside the handle; and its small fuel control valves are placed at the front end of the handle, where they can conveniently and easily be adjusted. Another feature is a special replacement tip nut, at end of extension, which eliminates necessity of replacing entire extension should threads in tip nut become worn.

The new torch is the Weldit "Model W," recently perfected by Weldit Acetylene Company of Detroit, designers of the recognized Weldit Gasaver.

How Will TDM Industry Fortify Itself?

(Continued from page 23)

more adequately cope with conditions which are to be imposed upon us.

Just as an enterprise of any kind requires capital, so your Institute is no exception. What can be accomplished is in direct ratio to the funds available. The prompt payment of the Institute annual dues by a majority of the Industry members is requisite to proper maintenance of the Institute. The sum—$10.00—is surely within the reach of every shop.

Shops You Should Know

TDM Industry Directory *Detroit, Michigan*

DAVIS TOOL & ENGINEERING COMPANY
6481 Epworth Blvd. TYler 46070
TOOLS and DIES
Special Machinery
Sheet Metal
Stampings and Assemblies

THE INTERSTATE TOOL COMPANY
19636 Mitchell Ave. TOwnsend 84853
Manufacturers — Engineers
Dies, Jigs, Fixtures, Gauges
Special Machinery *Machine Work*

***KOESTLIN TOOL & DIE CORPORATION**
3605 Humboldt Ave. LAfayette 1490
Manufacturers
Sheet Metal Dies "Grindrite" Die Grinders

***MAJESTIC TOOL & MFG. COMPANY**
2948 Woodbridge St., East FItzroy 1011
Manufacturers
General line of Tool and Die Work, Tool Details, Parker High Speed Grinding Spindles

NORTHEASTERN ENGINEERING CO.
3125 E. Larned St. FItzroy 1275
Specialists in the Designing and Building of Progressive Dies
Dies—Tools—Special Machinery

***ROBBINS ENGINEERING COMPANY**
635 Mt. Elliott Ave. FItzroy 4740
Designers and Manufacturers
Tools, Dies, Jigs, Fixtures
Special Machinery and Experimental Work

ROYAL OAK TOOL & MACHINE CO.
621 E. Fourth St. ELmhurst 6590
Manufacturers of
Tools, Dies, Jigs, Fixtures
Special Machinery and Designing
Hoeh Self-Centering Cylinder Reamers

***STAR TOOL & DIE WORKS**
2532 Twenty-Fourth St. LAfayette 1716
Manufacturers
Small, Medium and Large Dies
Special Machinery

*See larger display advertisement also.

When you order or write about products described in TDM PROGRESS please mention the publication.

Shops You Should Know

TDM Industry Directory *Cleveland, Ohio*

BARTH STAMPING & MACH. WORKS
W. 34 & DENISON SHa. 1857
DIES—TOOLS—JIGS—MOLDS
GLENN A. BARTH THOM. A. BARTH
J. A. BARTH J. J. BARTH

*THE BUNELL MACHINE & TOOL CO.
1600 East 24th St. PRospect 2681
JIGS—FIXTURES—GAGES—MODELS
Blanking, Forming, Drawing, Piercing
Trimming, Bending and Coining Dies
Special Tools and Machinery

CLEVELAND UNIVERSAL JIG COMPANY
13404 St. Clair Ave. MUlberry 3322
Designers and Builders
Jigs & Fixtures Special Machines
Production Engineering
COMPLETE PLANT ROUTING and TOOLING

THE INDUSTRIAL MACHINE CO.
1436 East 47th Street Founded in 1903
Builders of Special Machinery
GENERAL MACHINE WORK

*LYONS MACHINE COMPANY
5601 Tillman Ave. WOodbine 2440-2441
Manufacturers Special Machinery
Tools, Jigs, Fixtures Tungsten Carbide Tools
SWISS JIG BORING

*THE McKINNEY TOOL & MFG. CO.
1688 Arabella Rd. KEnmore 1681
Roller Die Forming Machines
Automatic Saw and Shear Cut-off Machines
Special Machinery—Dies, Jigs and Fixtures

MODERN TOOL & DIE CO.
1051 Power Ave. CHerry 7440
Whitney Power Bldg.
DESIGNERS AND BUILDERS
Tools & Dies *Special Machinery*
STAMPINGS

*The PHOENIX ICE MACHINE COMPANY
2711 Church Ave. CHerry 1048
72" Vertical
BORING MILL WORK
Let us figure

A. P. SCHRANER & COMPANY
3338 Payne Ave. HEnderson 8644
EXTERNAL CYLINDRICAL
LAPPING MACHINES
Special Machinery
TOOLS, DIES, JIGS, FIXTURES

STAR MACHINE & TOOL CO.
Established 1903
9320 Woodland Ave. GArfield 2060
DIES - JIGS - FIXTURES
Special Machines
JIG BORING with
Pratt & Whitney Precision Equipment
NEW OPENSIDE PLANER EQUIPMENT
12 ft. x 48" Capacity

*THE SOMMER & ADAMS CO.
18511 Euclid Ave. KEnmore 0810-0811
DESIGNERS AND BUILDERS
Special Machinery
TOOLS, JIGS and FIXTURES

TOOLS & GAGES, Inc.
3106 East 63d St. MIchigan 7230
"Let us be your tool room."
DESIGNERS AND BUILDERS
Tools, Gages, Dies, Jigs, Fixtures
Special Machinery
SWISS JIG BORING
DIE CASTING DIES

THE J. C. ULMER COMPANY
1791 East 38th St. HEnderson 4601
Tools, Dies, Jigs, Fixtures
Special Machinery *Designing and Building*
Experimental, Model, Punch Press and
Screw Machine Work

THE VARIETY MACHINE & STAMPING COMPANY
4383 West 35th St. SHadyside 4422-4423
DESIGNERS AND MANUFACTURERS
DIES
METAL STAMPINGS
We are equipped to make dies and stampings
in production up to 250 tons capacity

*See larger display advertisement also.

When you order or write about products described in TDM PROGRESS please mention the publication.

Shops You Should Know

Dayton, Ohio

*THE INTERNATIONAL TOOL CO.
434-438 East First St.
Manufacturers and Engineers
Dies, Jigs, Fixtures, Gages
Special Machinery, Machine Work, Designing

Hamilton, Ohio

*THE HAMILTON TOOL COMPANY
220-222 North B Street
Designers and Builders of
Tools, Dies, Jigs, Fixtures, Special Mach'y
The Hamilton Portable Elevating Table

Depreciation Reserve Policies

(Continued from page 25)

should be sufficient in scope to keep the executive informed as to whether the reserves for depreciation are (1) set aside in an investment fund of securities, (2) being used to acquire additional equipment, (3) borrowed for working capital to avoid bank loans, or (4) really eating up capital.

When it is necessary to convert equipment to meet changes in manufacturing procedure, complete records of this change-over should be reflected in the plant ledger.

If a revision of the value of the equipment for future use is necessary, the adjustment of loss, if any, should be made and proper adjustment also be provided with respect to depreciation allowances for the future.

The policies proposed do not prohibit the establishment of rates or methods of accumulation for recovery, but do require periodic review of the accuracy of any rates or methods used. Depreciation is not fixed but is as subject to change as any factor in any business. Technological progress is shortening the time that assets stay modern. Therefore depreciation reserve practice and policy require periodic review, and rates applied do not merit the permanence that is frequently and incorrectly ascribed to them.

The recommended depreciation reserve policy does not advocate higher or lower rates—rather it aims toward the establishment of factual rates supported by records.

Design of Roller Dies

(Continued from page 9)

after it leaves the forming rolls. When a section has to be straightened it has a tendency to either rise, fall, twist, or camber, or a combination of several or all of these conditions. Usually a very simple type of guide will suffice, consisting of merely a block of iron or bronze adjustably mounted to counteract the detrimental tendency of the moulding as it leaves the forming rolls. On the other hand, it is sometimes necessary to provide a very elaborate roller type of straightener to produce the section satisfactorily. This is definitely determined only by trial.

It is not meant that each new set of forming rolls must be developed and designed from the ground up, because most manufacturers of roll forming machinery and forming rolls have experienced the development of forming rolls for an extremely wide variation of sections and their contemplation of the design of forming rolls for a new section is usually without doubt. However, this article does not apply to the roll designer who is confronted with the design of a set of forming rolls for a section which is entirely different and with which he is totally unfamiliar.

● *You can be sure of Year 'Round Satisfaction if* **NETTLETON** *does your*

TOOL AND DIE HARDENING
●
STEEL TREATING
●
CARBURIZING - TEMPERING
●
CYANIDING - ANNEALING
●
COLORING

NETTLETON STEEL CO.
Wm. Nettleton
1371 E. 45th STREET CLEVELAND, O.
Phones: HEnderson 9590-9591

When you order or write about products described in TDM PROGRESS please mention the publication.

Apprentice Training School

(Continued from page 29)

pany's catalogs, booklets, and other informative material which is available to the students. This enables the boys to become familiar with our products and their practical application.

Scholastic and Work Records Kept

The permanent record sheets in the Training School office carry the scholastic grading of all the students. These grades are received periodically from the Ohio Mechanics Institute and from the University of Cincinnati.

The students are also graded once each week in the Apprentice School by their instructors on the following: Cleanliness, Safety, Accuracy, Speed, Initiative, Workmanship, Deportment, Mechanical Ability, Shop Lecture, Attendance and Tardiness. These grading reports are turned into the school's office at the completion of a student's training under one instructor. These grades are then averaged and entered upon the permanent records.

Work Being Done by Students

The work being done by the students in the Apprentice School is of basic practical value both to themselves and to the Company.

Their jobs are not experimental. Every effort is made to give them work which is of actual value to the Company. For example, the Apprentices produce new tools, repair tools and are engaged in standard production of a simple nature. They overhaul shop machines, fill petty orders (repair parts for obsolete machines) and perform miscellaneous salvage work which comes to them from the entire plant.

Periodical increases in hourly rate, as outlined in the facsimile of the contract, are based entirely upon grading records. Increases are granted at intervals of 1140 hours of work. Records of the student's performance in machine shop practice combined with his scholastic record determine amounts of increase.

Tools and Bonus

All apprentices are required to provide themselves with the ordinary hand tools necessary to the mechanic's work. These tools may be bought through the company at reduced prices and be paid for in small installments weekly. The supervisor of apprentices and his assistant make periodic inspection of the tools to see that they are being properly cared for so that at the completion of the apprenticeship, the graduate has a complete set of tools in good condition. All regular apprentices must acquire a full journeyman's kit before graduation.

Upon satisfactory completion of the Apprenticeship Course, the Company pays the graduate a cash bonus of $150.

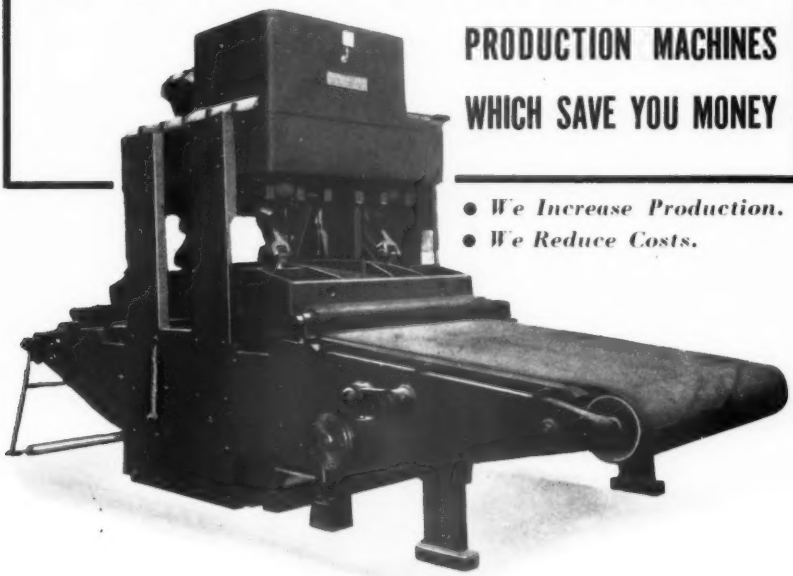
Certificate of Apprenticeship

All apprentices who complete the course of training satisfactorily in both shop practice and educational training are given a Certificate of Apprenticeship, inscribed with the length and character of apprenticeship and signed by the President of the Company, the Works Manager and the Supervisor of Apprentices.

Apprentices Working on Lathes

When you order or write about products described in TDM PROGRESS please mention the publication.

OUR BUSINESS IS TO DESIGN AND BUILD PRODUCTION MACHINES WHICH SAVE YOU MONEY



- *We Increase Production.*
- *We Reduce Costs.*

Hundreds of special machines have been designed and built by us for members of widely divergent industries.

As a product of our *Planned Production Engineering Service* we illustrate herewith an Automatic Machine which form-cuts rubber stock (as large as 72″ x 84″) coming directly from the calender, into automobile run-board covers, floor mats, etc. It has been so ingeniously designed and carefully built that it requires practically no attention while in operation. Hydraulically operated mechanism—operating cycles 0-20 per minute.

Your need is our opportunity—please call us.

Representatives

JOHN E. LIVINGSTONE & Co.
2921 E. Grand Blvd., Detroit

P. W. FRANKFURTER
4623 Morris St., Philadelphia

JOHN E. LIVINGSTONE & Co.
Windsor, Ontario

THE SOMMER & ADAMS CO.

18511 EUCLID AVENUE CLEVELAND, OHIO

Builders also of S & A Continuous Milling Machines, Special Tools, Jigs and Fixtures

When you order or write about products described in TDM PROGRESS please mention the publication.

A McKINNEY ROLLER DIE FORMING MACHINE IN ACTION

• The wide moulding used for automobile radiators and hood-trim is cold roll-formed by this STANDARD MODEL at the rate of 110 feet per minute.

Sections varying from 18 to 80 inches long are automatically cut off, thus permitting uninterrupted operation.

Chrome plating without *intermediate operations* is assured because product is free from surface defects.

Production equipment designed and built by McKINNEY is RIGHT—*Call us in to prove it.*

•

Designers and Manufacturers of

SPECIAL MACHINES FOR ALL INDUSTRIES

•

ROLLER DIE FORMING MACHINES

•

AUTOMATIC SAW AND SHEAR CUT-OFF MACHINES

•

JIGS AND FIXTURES

THE McKINNEY TOOL & MFG. CO.

1688 ARABELLA RD., CLEVELAND, O. 7310 WOODWARD AVE., DETROIT, MICH.

N G
acturers
OR ALL
ING
D SHEAR
NES
RES
O.
ICH.